



# Batéké Lefini Landscape Project



**Annual report FY 2014**

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## CARPE III, Annual report 2013-2014



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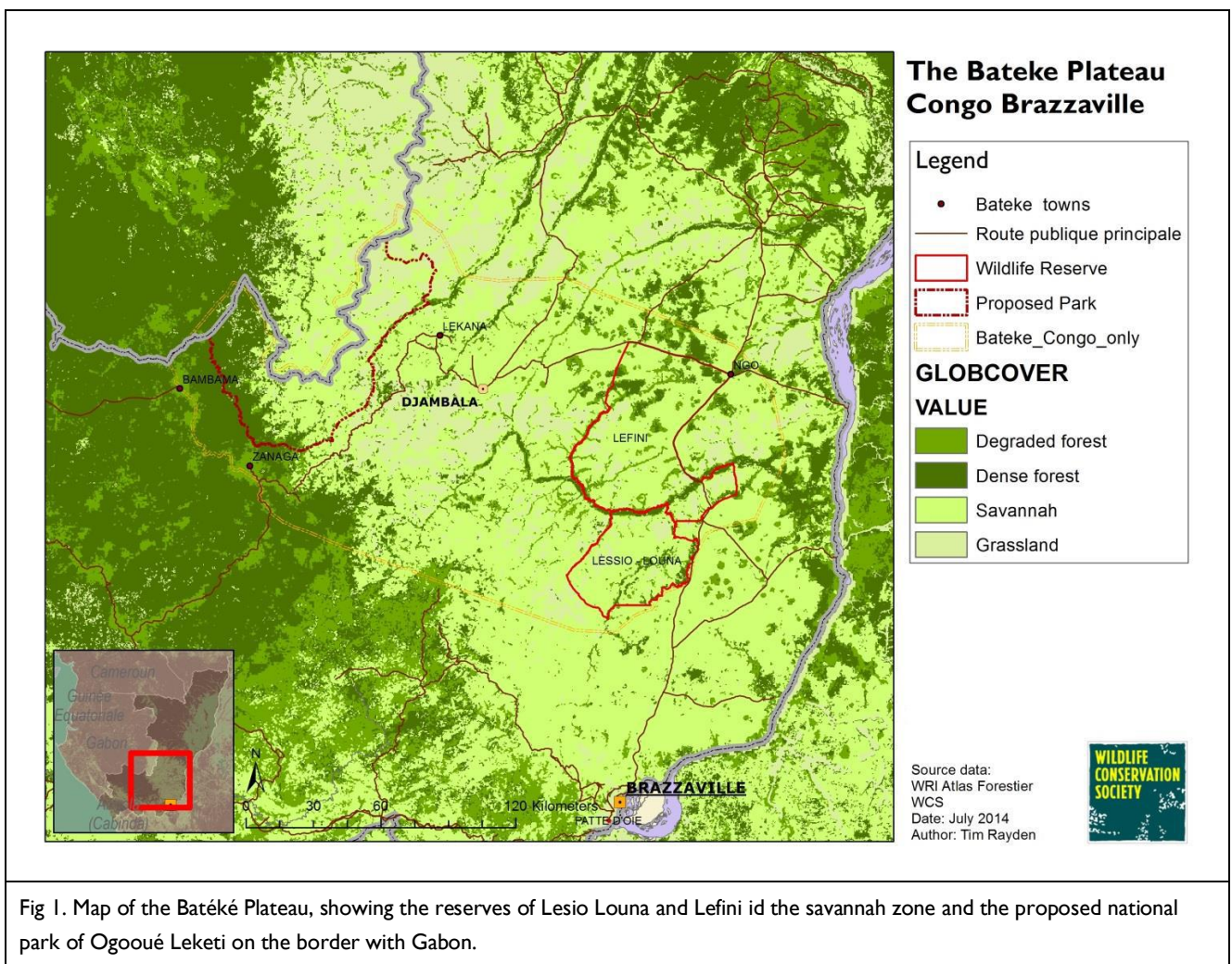
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## I. INTRODUCTION

This report presents the results of the first year of work under CARPE III by WCS and partners in the Batéké Plateau landscape. It concerns the period Sept 2013 to Sept 2014. The Batéke-Lefini Landscape is a mosaic of ancient grassland and wooded savannas with gallery forests running along river valleys linking larger closed-canopy forest blocks. The area's contains important remnant populations of forest species (forest elephants, gorillas, chimpanzees, bush pigs, duikers, monkeys, etc.) and an unusual complement of savanna species (Grimm's duiker, side-striped jackal and Denham's bustard). The landscape includes a new proposed national park, in the headwaters of the Ogooue River, Parc National Ogooue-Leketi (PNOL), the formal gazettelement of which is a primary objective of the project. Forestry companies have been logging the proposed park area, making its gazettelement all the more of a priority. At the same time, agricultural expansion, un-regulated bushmeat hunting and poor land use practices threaten conservation efforts. While the proximity of the national capital, Brazzaville, and economic capital Pointe Noire potentially exacerbates many of these threats, it also opens interesting possibilities to link biodiversity and forest conservation efforts to the sustainable production of goods and services within the landscape.



## 2. FY 14 PRIORITIES

Since the beginning of the CARPE landscape project in the Batéké plateau, the creation and protection of the Ogooué Leketi national park has been the primary objective. This remains a principle *raison d'être* for the project. Beyond this, and in line with the new phase of CARPE support for conservation efforts, two further priorities were spelt out in the FY 14 work plan, (I) to establish baseline rates for critical environmental and

livelihood parameters linked to CARPE priorities, (notably those linked to forest loss and degradation) and (2) take steps towards the implementation activities linked to improving these parameters (e.g. feasibility assessments, partnerships, recruitments and training).

### **3. SIGNIFICANT ACHIEVEMENTS IN FY 14**

In FY 14 we have completed the majority of the activities set out in the workplan. With the forest ministry, we have completed an official outreach/communication mission formally to inform the authorities and local communities of the government's intention to create the national park. The feedback from the local communities was overwhelmingly positive towards the creation of the park. The completion of the mission sets in motion an official gazettelement process, beginning with an official gazettelement meeting (*reunion de classement*) presided by the forests minister, and culminating in the signature of the gazettelement decree (*decret de classement*) by the ministerial cabinet. The gazettelement meeting is planned for December 2014.

In terms of establishing baselines and preparing for implementation, we have completed surveys of basic needs, protein consumption, hunting practices, agricultural productivity and firewood collection and use across the landscape. We have also measured forest cover and deforestation by macro-zone, and analysed the frequency of savannah fires. We have completed a feasibility study for animal husbandry (alternative protein projects) begun fundraising for project implementation and recruited a community projects coordinator and an agriculture specialist to oversee these and other future interventions.

In terms of implementation, we have put in place the sub-grant agreement with the The Aspinall Foundation to support management of the Lesio Louna wildlife reserve and the Foundation's PROFADÉLL<sup>1</sup> project. The project, which supports alternative livelihood activities in the reserve buffer zone, has established over 70ha of community plantations with 17 village associations during the last four years. This year, with CARPE support, it has continued to expand its efforts. Following this model, WCS has begun agroforestry plantation activities in three villages, and will sign a fourth agreement in early FY 15.

Meanwhile we have made several anti-poaching and surveillance missions to the Ogooue Leketi park area, through a new agreement with the recently formed Brigade Mobile, based in Dolesi (Near Point Noire to the south of the landscape), and with the local forest department staff from Zanaga and Bambama. TAF continues to support regular patrolling within the Lesio Louna reserve.

### **4. PROGRESS ON INTERVENTIONS BY CAFEC STRATEGY**

#### ***Strengthen protected area management***

##### **Park Gazettelement**

While logging activity in the proposed park area has presented a barrier to the park gazettelement process, WCS has forged ahead with the administrative steps necessary to secure the area. An official ministry delegation to inform the local administrations and the communities in the park periphery of the intention to create the park (known as a '*mission de sensibilisation*') was finally completed, with CARPE support. The official ministry mission report sets in motion the gazettelement process. The process begins with a gazettelement meeting, a gathering of all the relevant stakeholders and presided over by the forests minister

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<sup>1</sup> PROFADÉLL : Projet en Faveur du Développement Local en Périphérie de la Réserve Naturelle des Gorilles de Lésio-Louna,

that must take place 60 days after the *mission de sensibilisation*. The product of the meeting is the validation of the *decret de classement* for the park. Once validated by the meeting of stakeholders, the *decret* is formally submitted to the ministerial cabinet (*Conseil de Ministres*) for approval.

In recent years a mining consortium (MPD) has been exploring a large iron ore deposit immediately outside the western limit of the landscape, near the town of Zanaga. Agreement for the Zanaga iron ore mining concession was formally announced in August of 2014. MPD have been granted permission to begin exploitation of the mine, which is located to the north-west of Zanaga.

Since 2010 WCS has worked with MPD on preparatory studies for the company's environmental impact assessment. The assessment is now completed and submitted. Following discussions between MPD and WCS about a future partnership for the protection of the Ogooué Leketi national park, the draft text of the mining convention (*Convention Miniere*), that accompanies the extraction permit, was agreed. The convention commits the company to support the creation and management of the park, and support the forest ministry and its technical partners in assuring protection of the area, as the key component of their environmental compensation strategy.

Pressure from WCS, the signature of the mining convention and MPD's commitment to support the park creation process seem finally to have unblocked the progress of park gazettelement. Discussions are now ongoing with the company and the forests ministry on how this engagement may be structured. The first step that has been agreed is on joint participation in the gazettelement meeting, planned for December 2014. Following that, WCS has agreed to advance a technical proposal to MPD and the forest ministry on how a partnership with the government for park management could be structured and financed.

## ***Implementation of improved land use planning***

### **Foncier Property rights and community zoning maps**

Fuel wood plantations were identified as a possible intervention in the community management plans developed under CARPE II for the CBRNM zones of Lefini and Lekana. A significant aim of the Batéké Landscape project under CARPE III is therefore to promote plantations in savannah areas where fuel wood is in short supply, or agroforestry can bring significant local livelihood improvements.

While the land zoning exercises carried out under CARPE II indicate broad areas where plantations could be established, it was necessary to conduct detailed consultations with the villagers concerned, to identify suitable zones, and to establish existing property rights to these areas. These consultations were undertaken during June and July of 2014 in four villages (Kebara, Lekana CBNRM, and Okiene, Mpoh and Ebou in the Lefini CBNRM) in partnership with the national afforestation service (*Service National de Reboisement*, SNR).

A model agreement for plantation establishment involving the association, the property owner and WCS was elaborated, and discussed with the concerned parties and adapted for each village context. The agreement sets out conditions for cost and benefit sharing between the village association, the traditional property owner and WCS. Three agreements, with the villages of Kebara, Mpoh and Ebou were signed in August 2014, committing the parties to develop an initial trial plantation of 2ha in each village. Work began on ground preparation in September, and the first trees will be planted in early November.

In each case, the sites chosen for plantation establishment allow for future expansion in savannah areas close to the village. Maps of fire wood collection sites and the plantation zones have been developed for each village (see Agroforestry and fuel wood economy, below).

## **Amies de La Lefini**

The Friends of Lefini Faunal Reserve is a local association based in Mpoh village that is informally engaged in the development of tourism in the reserve. The association has benefited from CARPE support in the past for the purchase of some material, and has received funding from the French Embassy in Brazzaville to restore the Gite de Mpoh, a small guesthouse in the reserve where visitors from Brazzaville can stay. Members of the association help the reserve conservator to manage the upkeep of the Gite. In the absence of any significant investment in Lefini from the forests administration, (the administration employs only two staff for the reserve, the conservator and his assistant, and the reserve has no operational budget) the members of the association are interested to take on a greater role in management of the reserve. The association sees the reserve as an important way to protect their natural heritage, and bring value to the village through tourism activities..

WCS has sought to promote the roll of the association to the parks service (the *Agence Congolaise de la Faune et des Aires Protegees – ACFAP*) as a formal partner in reserve management. A draft MoU (*protocol d'accord*) between the Association and the ACFAP has been prepared, and submitted to ACFAP for discussion. WCS has also promoted dialogue between the conservator and the association on the sharing of tourism revenue.

To date, however, the administration has not responded to requests to formalise the partnership. WCS is investigating other ways to empower the association. One way this could be done, is by developing a role for them in research and data collection on the wildlife around the area of the Gite. A research partnership with a group from University College London who specialise in this approach, using smart-phones to enable field data collection and mapping, will be developed in FY 15. This research activity would give them a formal role within the reserve, and the use of the information produced (typically in map form) would highlight the value of the association to the government.

## ***Enhance Law enforcement and protection***

### **Anti-Poaching in Ogooue Leketi**

WCS has begun to intensify efforts to control illegal hunting and poaching in the proposed park area. While no formal structure exists to employ park ecoguards, WCS continues to employ field staff to patrol the area and maintain an ongoing surveillance of illegal activities. These field teams, which are jointly financed by CARPE and USFWS have executed regular missions on foot within the proposed park. The missions are accompanied by a member of the local forest ministry brigade, and or a member of the local police force. The goal of the missions is to monitor the expansion of logging activity, and maintain a presence in the forest focussed on three forest clearings that are important sites for large mammals.

To reinforce law enforcement in the area, we have engaged in a partnership with the recently created *Brigade Mobile*. The Brigade is a recent ministerial initiative to create a mobile rapid reaction force. The brigade is based in Dolesi, but has a mandate to operate across the three departments of the south of the country, and covers the zone of the proposed park. Two missions were completed with the Brigade Mobile within the park area, both of which resulted in seizures from hunters using the logging roads to access deep into the forest on motor cycle. Nine arms were seized during two missions in June and August, along with poached specimens of protected species, including f mandrill and water chevrotain.





Fig. 2. The Brigade Mobile of Dolesi in action near Zanaga (Photo: MEFDD)

WCS and the Brigade Mobile have made repeated efforts to pressure the logging companies to adopt strict internal rules and procedures to prevent access and control their own personnel. The companies have so far refused to take action, and road access to the proposed park remains open and un-controlled.



Fig.3. The bridge over the Ogooue river created by Asia Congo Industries to exploit timber within the proposed national park. (Photo: Sarah Banks)

To date these efforts to reinforce protection have remained somewhat ad hoc, due to the absence of a central coordinating structure. In an effort to increase the effectiveness of protection efforts, we have put in place the SMART monitoring system to track patrol results, and recruited a new anti-poaching coordinator.

The coordinator is based in Zanaga and will have responsibility to organise and execute all surveillance and LAB patrols, ensure consistent data collection and reporting, and follow-up all arrests and fines in collaboration with PALF. The coordinator will be assisted by a technician to oversee data collection and storage. A SMART training event involving WCS and Brigade Mobile was conducted in October 2014.

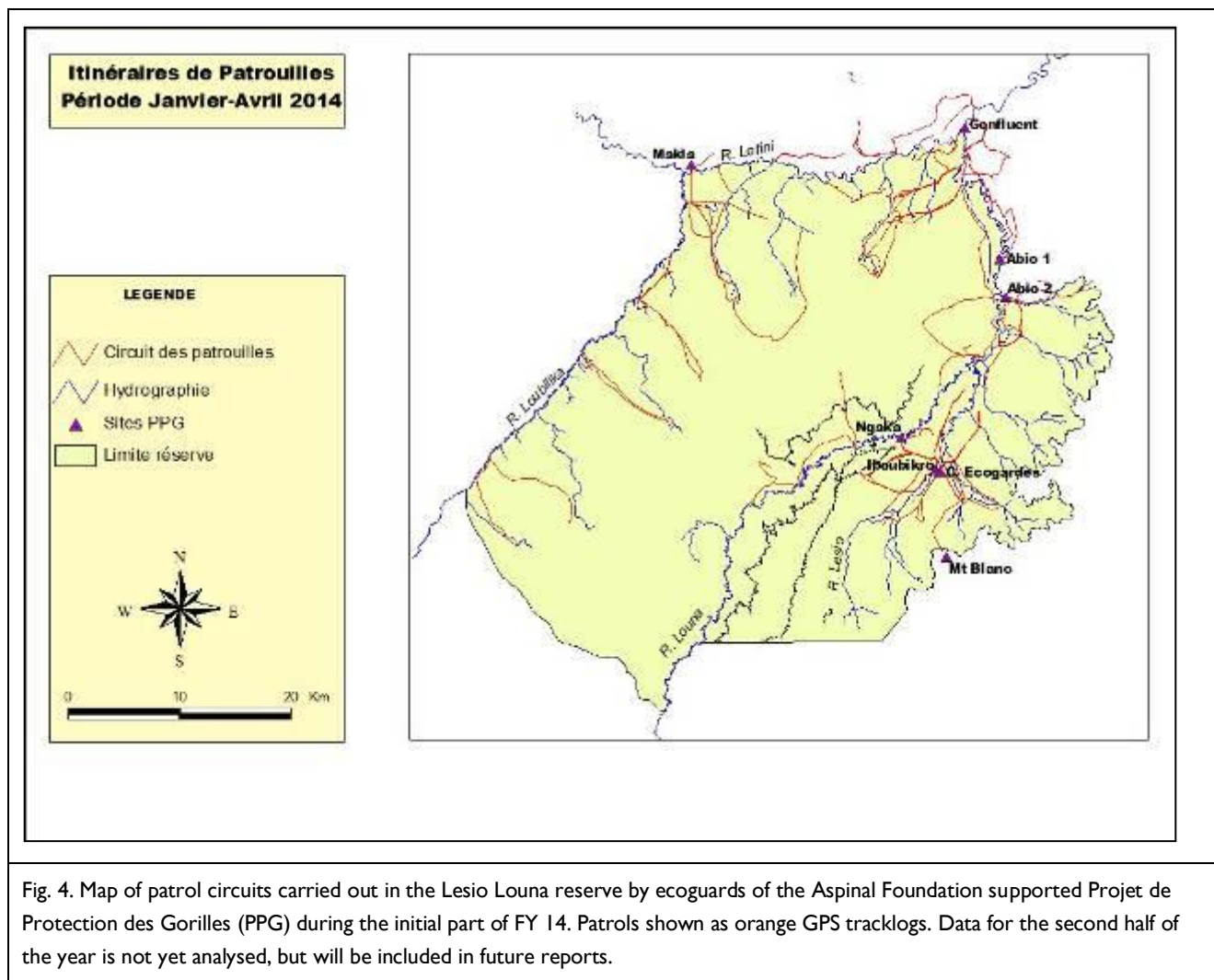
### **Anti-poaching strategy**

Under the guidance of WCS's Law Enforcement and monitoring coordinator, the actors concerned (Brigade Mobile, Eaux et Forêts Zanaga and WCS) have developed a short-term anti-poaching strategy for the interim period until the park is officially gazetted. A key point of the strategy is the control of the road access to the park area. WCS has requested that the forest ministry assign an additional detail of forest guards (*aides forestiers*) to Zanaga. An agreement will be put in place to allow WCS to cover mission costs to enable these new guards to be stationed at the Ogooué bridge. WCS will provide logistics and ensure data collection and reporting of all seizures and associated legal proceedings.

### **Anti-Poaching in Lesio Louna**

With CARPE support in FY 14, TAF have continued to patrol the Lesio Louna reserve and to control poaching activities. In total the ecoguards of the Aspin Foundation's Projet de Protection des Gorilles (PPG) achieved 800 man days and around 650km of patrol (on rivers and on foot). 7 firearms were seized and nearly 200 wire snares destroyed.

An internal evaluation of the effectiveness of these efforts by TAF management was conducted. It was concluded that further training on anti-poaching strategies, and more rigorous monitoring and oversight of the ecoguards will be necessary. To increase the effectiveness of anti-poaching efforts and the rigour of data collection during patrols, two agents from Lesio Louna were trained by WCS in the use of the SMART system. Experience gained from this training has shown that a full training on SMART for the entire Lesio Louna ecoguard staff will be required to ensure the robust application of the relevant procedures. This is now planned for FY15.



TAF continued regular outreach and communication missions to the buffer zone villages to ensure local understanding of ecoguard activities and wide awareness of the need to prevent uncontrolled hunting in the reserve.

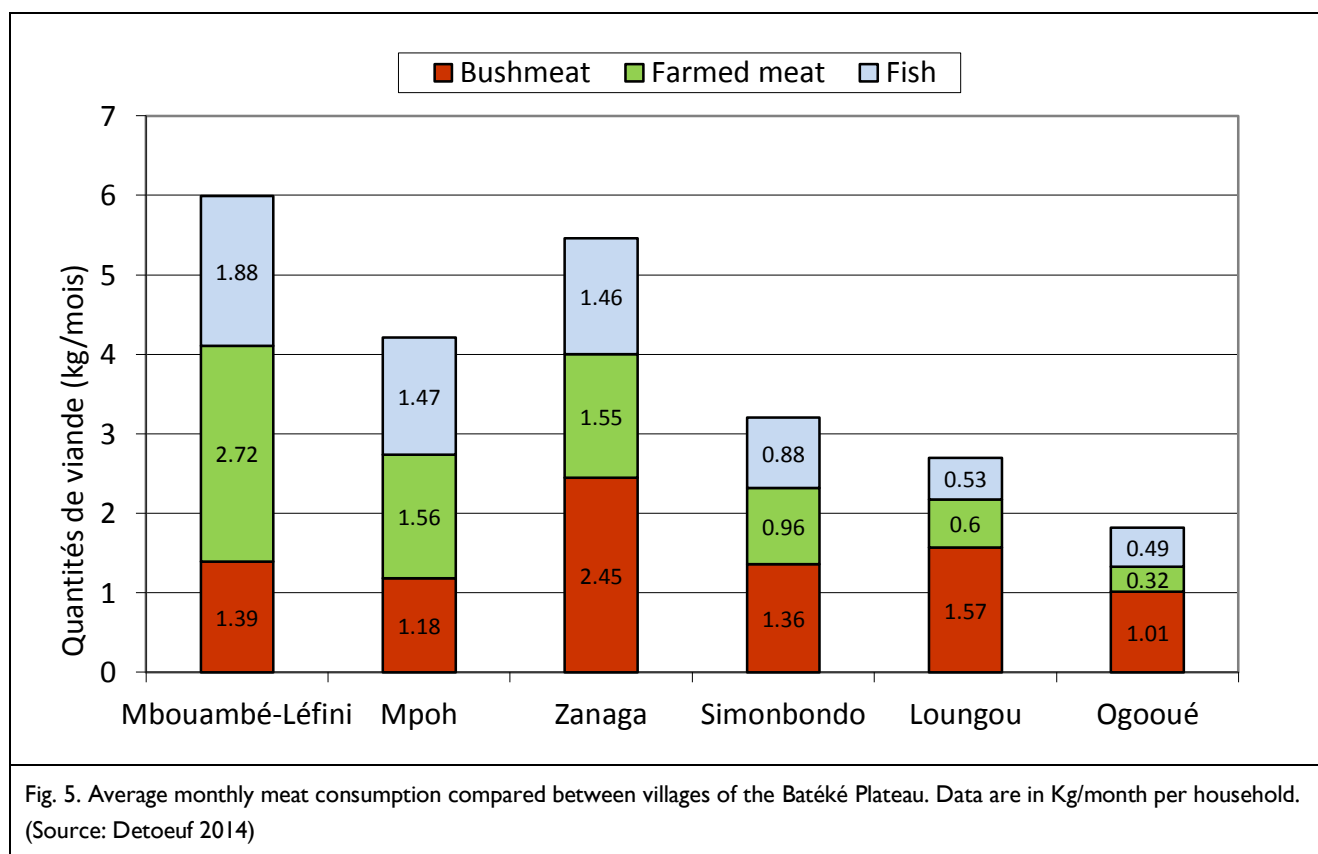
### ***Promote sustainable livelihood alternatives to unsustainable practices***

#### **Bushmeat consumption study**

In previous years of CARPE support, the Project has surveyed hunting practices and bushmeat consumption in the Zanaga area of the landscape. Data on bushmeat prices and hunting returns is available for some sites in the west of the landscape from 2010. This year, given the necessary focus on livelihoods, and the necessity to establish a robust baseline for future work, we have conducted a standardised survey of *protein consumption* across the whole landscape including sites near the Lefini reserve as well as the Zanaga area.

The objective of the surveys was to measure the importance of bushmeat in the diet of local people across the landscape with respect to other possible sources of animal protein (whether fish or farmed meat). The study provides a baseline of household consumption that will be critical for measuring the success of future initiatives on animal husbandry, as well as to evaluate the impacts of increasing law enforcement in the park area.

The results establish an important baseline for household expenditure, and clearly show the importance of bushmeat for nutrition in all sites. They also show that poorer, more isolated villages (such as Loungou and Ogooué) depend more heavily on bushmeat than farmed meat for protein. In addition, comparison of the figures across all sites shows that overall protein consumption in those isolated sites is much lower (in kg per day) than that in wealthy villages and towns with good road access. These results correlate well with the results of the BNS surveys, and show the link between wealth and increasing protein consumption. The survey has contributed important information to the development of a strategy to promote domestic (farmed) protein, described below.



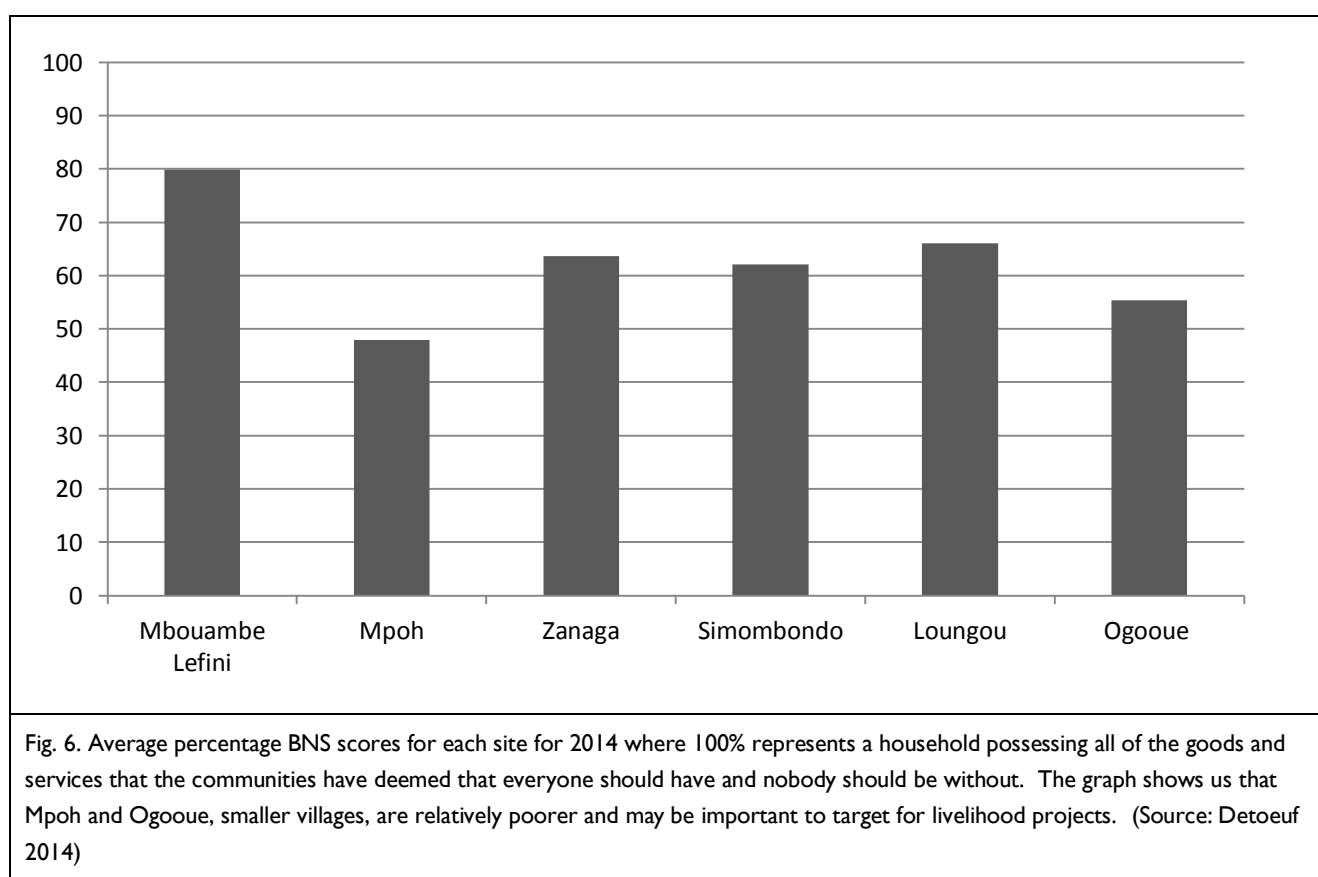
## Basic Necessities Surveys

WCS has conducted basic necessities surveys (BNS) in all target villages in conjunction with the surveys of fuel wood consumption and the bushmeat and protein surveys. The goal of this survey is to establish a livelihoods baseline for each site, and to enable future comparisons following CARPE interventions. The survey methodology uses focus groups in each village to produce a list of around 35 items that are considered desirable. The list combines both essential household items and those that the groups agree are needed, even if few households actually possess them. This list is then used in questionnaire surveys of individual households. The surveys determine how many of the basic necessities a given household possesses, and thus creates a proxy measure of the wealth of the household. A BNS database has been established for the Batéké Plateau sites.

**Table 1. Villages surveyed for BNS**

Area	Studied site	Approx population	Number of persons surveyed
<b>Area 1: Léfini</b>	Mbouambé-Léfini	2000	38
	Mpoh	250	39
<b>Area 2: OLNP</b>	Zanaga	3000	40
	Ogooué	250	40
	Loungou	350	37
	Simombondo	300	40

While the list of needs is specific to each site, the scores (for example the percentage of households that possess more than half the items on the list) can be analysed across sites to facilitate comparative measures of wealth. Average scores for this ‘level of satisfaction of basic necessities’ for each surveyed site are shown in Fig 2 below.



The BNS in the Batéké landscape was the pilot for CARPE impact monitoring of poverty reduction. Lorena Aguilar, the leader of the gender team for IUCN, visited the site in June in order to help incorporate gender into the tool so that it could also be used to monitor gender indicators. Lessons learned from the fieldwork have been incorporated into the development of the tool in July/August, which was presented in a CARPE partners’ workshop in Ituri in September 2014 (see Ituri report for further details).

### **Animal husbandry feasibility study**



In collaboration with the International Partnership for Human Development (IPHD), an assessment was made of previous animal husbandry projects in the landscape. This assessment highlighted the weaknesses of previous efforts and the economic limitations of small scale production, in a context where animal feed is expensive and technical knowledge is scarce.

This assessment led to a discussion of ways to resolve these problems. Several options were discussed including small, medium and large scale farming of pigs, sheep, chickens and fish. A simple analysis of feed conversion efficiencies against the cost of animal feed in Congo suggests that fish and chicken are the most likely to be profitable husbandry options, but only in cases where production can be maximised and labour costs kept to a minimum.

A feasibility study was therefore conducted of large scale commercial chicken and fish production in the Batéké Landscape, along with northern Congo. The feasibility assessment (Onuska, IPHD 2014) presents a detailed investigation of the costs and predicted revenues from the establishment of a large scale commercial chicken farm near Ngo, and fish farm near Bambama. The proposed farms would be as follows:

- 1 Broiler Farm (Ngo area)- 3,840 birds or 5,240kg/month
- 1 Layer Farm (Ngo area)- 83,000 eggs/month
- 1 Processing Facility (Ngo, adjacent to broiler farm)- 260 birds/day (up to 5,000 birds per month)
- 1 Tilapia Farm (Bambama)- 2 x 0.25ha ponds + breeding pond, 875 kg tilapia/month

The assessment finds not only that these investments can be profitable, but that they can be profitable *while producing meat for a price below the current price of bushmeat*. To make this happen, finance needs to be found to cover the set up costs at a modest rate of interest, and technical assistance from relevant experts (e.g. IPHD technicians). Details of the individual farm projects are presented in the report.

Following discussions between IPHD and the Minister of Agriculture, a project proposal was prepared for the use of the government's agricultural development fund (Fonds de Soutien Agricole) to cover the upfront investment in farm infra-structure development. The ministry has agreed in principle to this proposal. Funds to cover the technical assistance component will go beyond the available funding from CARPE and are being sought from other partners, but we are hopeful that the project will start in 2015.

## ***Integrate REDD+ at the landscape scale***

### **Baseline assessment and reference scenario**

Using data from the assessment of forest cover made by the University of Maryland<sup>2</sup> we have calculated the forest area and forest change that has taken place over the landscape between 2000 and 2012. This gives a gross figure for deforestation and provides an initial estimate of the baseline, or business as usual rate of forest loss. The Batéké Plateau landscape is about 3M ha in size, and about 28% covered by forest. Over the period since 2000 to 2012 it has lost an estimated 10,000 ha of forest, or 1.2% of the total forest cover.

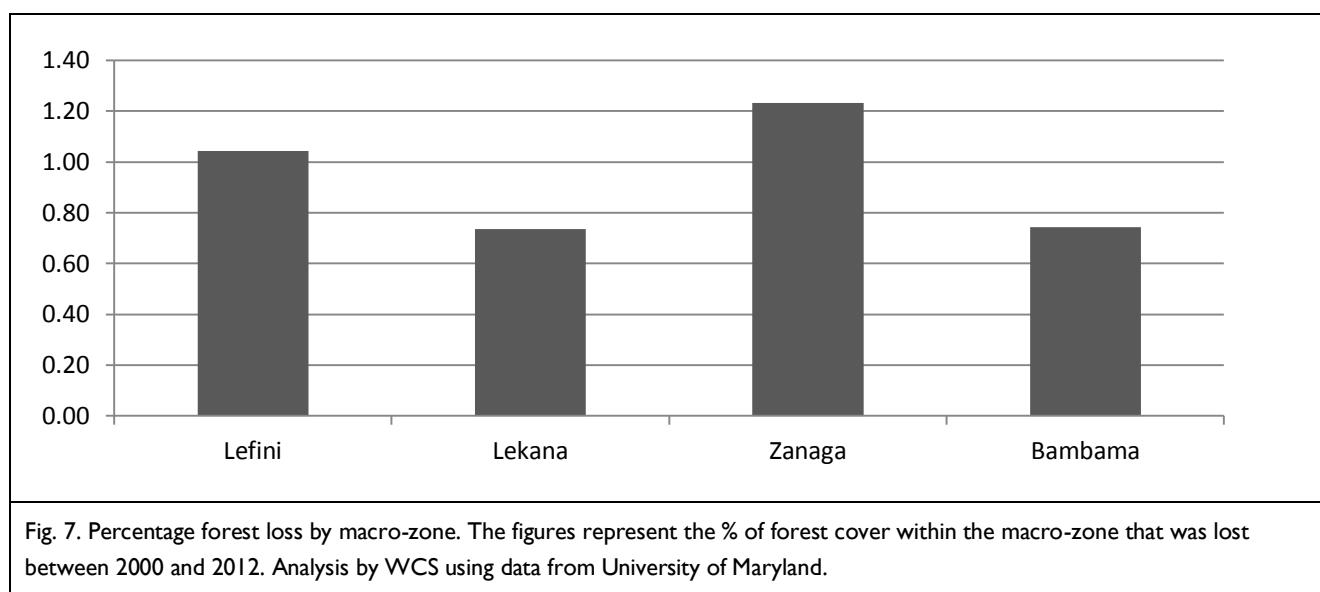
<b>Table 2. Batéké forest cover and deforestation statistics</b>					
Total area (ha)	Area of forest 2000 (ha)	Percent forest cover	Area of forest loss (ha)	Percent forest loss 2000-2012	Estd. Annual loss
3,014,428	857,762	28.46	10,432	1.22	0.101

<sup>2</sup> <http://earthenginepartners.appspot.com/science-2013-global-forest> Data from Landsat 7 images at 30m resolution.

Deforestation and forest cover loss is not uniform across the landscape, and these landscape figures can be broken down by macro-zone to see how the different areas compare with the landscape average.

In parallel to this, WCS is working on a classification of Landsat images from 1990 to enable a long term analysis of forest loss. Data from 1990, 2000, 2012 and 2014 will then give a very accurate basis for predictions of future change, under business as usual, and enable the creation of a landscape specific reference scenario. This work will be ongoing in FY 15.

<b>Table 3. Forest loss by CBNRM</b>					
<b>CBNRM</b>	<b>Area forest (Km2)</b>	<b>Area loss (km2)</b>	<b>Area gain (km2)</b>	<b>Net loss (km2)</b>	<b>Net Loss %</b>
Lefini	414.31	5.2	0.9	4.3182	1.04
Lekana	196.03	1.5	0.1	1.44	0.73
Zanaga	779.00	11.4	1.8	9.5985	1.23
Bambama	1472.84	13.5	2.6	10.9611	0.74



### Fire management study

Despite the tropical climate and high rainfall in Congo Brazzaville, more than a third of the country is covered by savannah grasslands. The Batéké plateau is dominated by grassland, even though it receives more rainfall than parts of the forested north. This paradox arises for two main reasons. Firstly the soils are generally sandy and infertile, and can retain little of the rainfall that arrives. Secondly, man has been present in these grassland ecosystems for hundreds of thousands of years, and has used fire to maintain grass cover and control the growth of woody vegetation.

It is estimated from satellite images and through local consultations that the entire plateau savannah system is subjected to burning every 1-2 years. In many cases the same area will burn twice a year. The consequence

of fire exclusion from these ecosystems is largely unknown, and the absence of un-burned control sites makes it difficult to estimate the emissions from burning, or the likely sequestration that could be achieved.



Fig. 8. Fire in the grassy savannah of the Batéké Palteau, near Lekana. (Photo: Jim Meniakos)

In this context, we have developed a strategy to build a robust understanding of the role of fire in the forest-savannah matrix, and its consequences for the national carbon budget (and hence the REDD strategy). USFS provided a team of two fire ecologists, and supported their participation in a two week scoping mission to Batéké. The object of the mission was threefold:

- To evaluate the feasibility of a long term study on the role of fire in the Batéké savannahs
- To propose a set of methods that could be used to quantify the effects of fire (and the exclusion of fire) in different habitats
- To select a site that would be appropriate for a long term ecological study
- To test approaches to fire control and fire exclusion

Further to this, the USFS has agreed to finance a PhD study on this topic, and provide on-going support to the student through its in house fire-ecology expertise. A research partnership has been developed with the University of Edinburgh (UK), and a student will be recruited in Q4 of 2014. Field work for the PhD project is likely to start in Jan 2015.

### **Agroforestry plantations and fuel wood economy**

In addition to fire in the Batéké savannas, the use of fuel wood and, in particular the commercial production of charcoal is a main source of carbon emissions, and significant driver of forest degradation. The Aspinall Foundation realised the threat that charcoal production posed to the Lesio Louna Reserve many years ago, and through earlier phases of CARPE, initiated fuel wood plantations in several villages of the reserves periphery. These plantation activities became the focus of a specific project (PROFADELL) which is now in its fifth year of operation, has established agreements with 23 villages associations and created over 70 ha of plantations. This activity was expanded further in FY 14 with CARPE support.



Fig 9. Preparation of a charcoal fire near Lesio Louna reserve. A stack of about 30 cubic meters of wood is covered with earth and burned to produce around 3 tonnes of charcoal. (Photo: Lucie Escoufflaire)

The aim of plantation establishment was to provide an alternative, sustainable resource of fuel wood and raw material for charcoal. However, the model of plantation establishment has replicated the agroforestry system developed by projects such as Ibi Village in DRC, where cassava and peanuts can be intercropped with the young trees in the early stages. This system allows at least two commercial crop harvests for short term benefit before the trees reach a size that excludes other vegetation. The fast growing species used in the plantations (Eucalyptus and Acacia) can be harvested for charcoal after 4-5 years or for telegraph poles after 6-7 years.

In FY 14 WCS has replicated this model with village associations in three villages (Kebara, Mpoh and Ebou). A total of 8 ha will be planted by the end of November 2014. We hope to sign a forth agreement (Okiene) in early 2015. The establishment of the plantations in each site is based on a benefit sharing agreement that is outlined in an agreement (*Protocole d'Accord*) between four parties: the property owner, the village committee, the village association (implementers of the project) and WCS. According to the agreement, the village association agrees to pay the property owner a rent for the land to be planted. This rent is a one off payment for the life of the plantation cycle (min 5 years). The association agrees to clear the land of shrubs and small trees, while WCS agrees to finance the preparation of the land (ploughing and harrowing). WCS further agrees to provide the tree seedlings through our existing agreement with the national reforestation service (SNR), and provides a contribution towards the cost of the plant material (ground nuts and cassava) to be inter-planted with the trees in the first year.

After the first year's harvest of agricultural produce, the benefits are shared as follows:

- 70% of the produce is distributed equally among the members of the association
- 20% is sold by the association to generate funds the association
- 10% is given to the village committee (village development fund)

After the harvest of wood products from the plantation the benefits are shared in the following way:

- 50% of the produce is distributed equally among the members of the association
- 10% is returned to the property owner

- 20% is given to the village committee (village development fund)
- 20% is sold by the association to generate funds for the association

This initial, modest, investment in these three villages will be expanded annually in the following growing seasons. A projection of the carbon sequestration potential from a steady expansion of plantation area in these four sites is shown in table 3 below. Figures for carbon accumulation are taken from the Winrock AFOLU carbon calculator<sup>3</sup>. Once the potential of this 'pilot' project activity is demonstrated to the villages concerned, we will encourage other villages to join the initiative. Adding additional sites or increasing the planted area in any of the existing sites would clearly boost the carbon sequestering potential of this initiative. We will also investigate ways in which village associations could access the start-up finance necessary to be able to develop their own plantations without the need for WCS (CARPE) financial support. However, as future expansion depends on the success of the initial effort, and the willing participation of each village association, it is necessary to remain conservative in projections.

<b>Table 4. Projected CO<sub>2</sub> sequestration via agroforestry in Batéké</b>					
<b>Agroforestry plantations</b>	<b>Yr 1</b>	<b>Yr 2</b>	<b>Yr 3</b>	<b>Yr 4</b>	<b>Yr 5</b>
N ha planted	8	10	10	10	10
Cumulative ha (assuming 4 sites)	8	18	28	38	48
Carbon accumulation rate (tC/ha)	5.5	5.5	5.5	5.5	5.5
Annual C sequestered	44	99	154	209	264
<b>Total CO<sub>2</sub> sequestered (t)</b>	<b>161</b>	<b>363</b>	<b>565</b>	<b>767</b>	<b>969</b>

<sup>3</sup> <http://www.afolucarbon.org/>



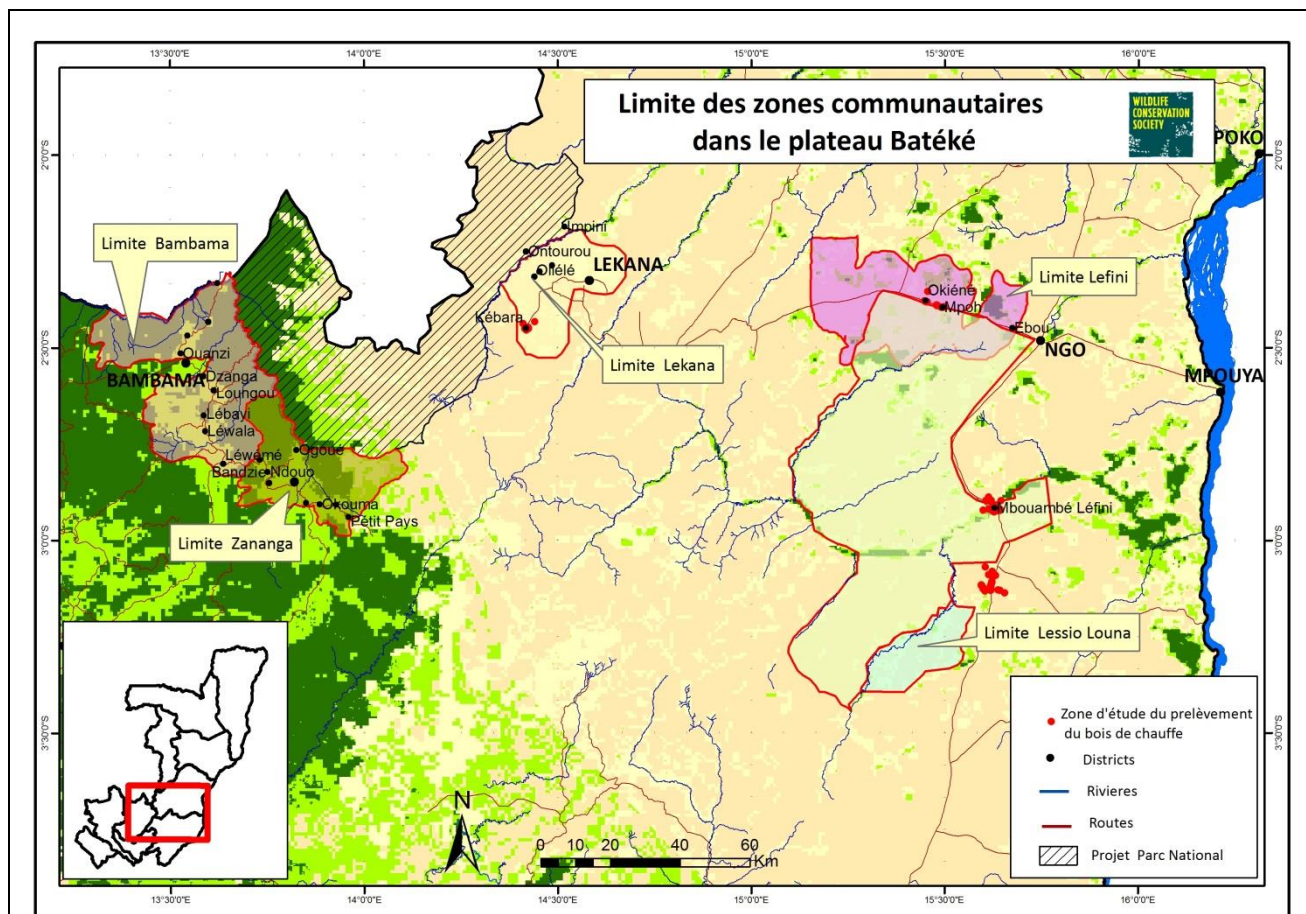


Fig 10. Map of CNRM zones in the Batéké plateau, showing the sites where data on fuel wood consumption has been collected (red points). Pilot plantation projects have been undertaken in the villages of Kebara (CBNRM Lekana) and Okiene, Mpoh and Ebou (CBNRM Lefini, near Ngo)

Before CARPE III, no baseline studies of charcoal production or fuel wood consumption had been carried out in the landscape. This was a therefore a crucial first step for CARPE III before further plantation establishment. WCS has completed extensive household surveys of wood collection and consumption patterns in 7 villages across the landscape. A separate report (Escoufflaire, WCS, 2014) details the findings of the study.

**Table 5. Average fuel wood consumption per day in different sites**

Village	Ebou	Mpoh	Okiene	Mbouambe	Mpoumako	Kebara
Number of measures	107	151	92	137	148	92
Av consumption/day (kg)	4.18	8.2	3.2	24.15	12.02	6.63
Av consumption/day (kg) (excl sale & restaurants)	4.18	4.79	3.2	9.74	11.97	6





Fig. 11. Fuel wood collection in the savannah near Okiene village (Photo: Lucie Escoufflaire)

In addition to quantifying the need for an alternative resource, the study shows the time and energy consumed (mostly by women) in the collection of fuel wood. While this is rarely perceived as a *financial* outlay, all participants in the study expressed an interest in reducing their dependence on wild fuel wood and economising on the effort of fuel wood collection. In this context we have developed the terms of a study to evaluate the feasibility of the production and sale of improved cook-stoves in the landscape. A French NGO, *Initiative Development* (ID) has developed a very successful cook-stoves project in Brazzaville, using waste/recycled iron sheeting to produce a cook-stove that works equally well with wood or charcoal. ID has expressed an interest in working with WCS to replicate the model in the Batéké landscape. The feasibility study will be conducted in early 2015, and we hope to develop a long term implementation project during FY15.



Fig. 12. Traditional 3-stone cooking fires in villages in the Plateau (Photos: Lucie Escoufflaire)

Initial calculations using the Winrock AFOLU carbon calculator suggest that implementing improved stoves in 200 households in FY 15 would avoid the emission of around 1000 tonnes of CO<sub>2</sub> per year . Following the

feasibility assessment and initial trial of the improved stoves, it will be possible to indicate the eventual scale that this intervention could attain. Assuming a viable business can be created for the manufacture and sale of the stoves, and that households judge the investment of buying the stove to be worthwhile, this project could eventually reach all the inhabitants of the landscape (approx. 10,000 households, generating 50,000 tonnes of emissions reductions). However, realistic projects should only be made based on the results of the feasibility assessment.

## **5. PROGRESS TOWARDS NATIONAL REDD STRATEGIES AND ACTIONS**

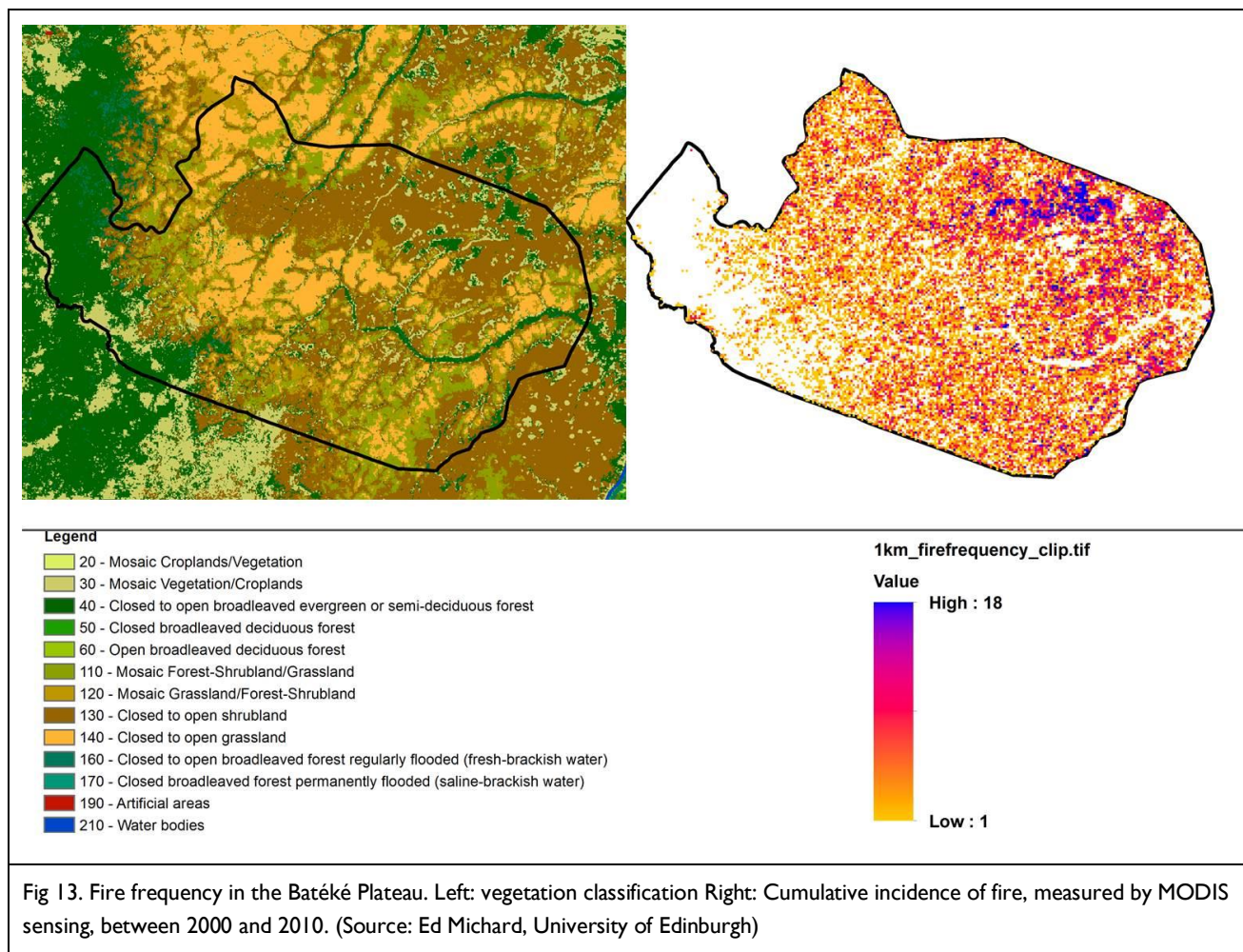
Work on REDD+ and emissions reductions covers four areas, all of which contribute to the development of the National REDD strategy in Congo. Firstly, we have completed an assessment of forest loss across the landscape using historic satellite images, and begun the construction of a landscape-specific reference scenario. This deforestation assessment sets the baseline for future forest loss under business as usual conditions, and will provide a basis for monitoring success in each macro-zone over the life of the project. The Batéké Plateau reference scenario will be compared with national level data once the national process moves ahead. Methods and results will be discussed with the CN-REDD and aligned accordingly to ensure compatibility.

Secondly, our on-going study on fuel-wood and charcoal use, creates a baseline of current household consumption, and provides an overview of the origins of fuel wood used in each village. The fuel wood and charcoal study was organised and executed in parallel with a national study in the urban centres coordinated by the CN-REDD. Data from the WCS study has been shared with the CN-REDD, as the village level data provides important counter-point to the national urban study. To follow up on the consumption study, we have developed a partnership with the French NGO *Initiative Développement* for the roll-out of fuel efficient cook-stoves in Batéké. A feasibility study and project implementation plan is forthcoming in FY 15 as described above.

Thirdly, the agro-forestry plantation activities mentioned above create a sustainable fuel wood resource, while contributing towards the government's target of afforestation, under the *Programme National de Afforestation et Reboisement* (PRONAR – itself a central component of the REDD+ strategy for the Congo) while providing additional income to the village associations.

Finally, the incidence and extent of fires across the plateau grasslands has been assessed. USFS provided a team of fire ecology experts to conduct an initial study on savannah fires in the plateau with a view to the establishment of a long term fire ecology study in the landscape. The detailed report from the USFS sets out the main research questions and methods to investigate the roll of fire in preventing forest colonisation of the savannahs and the feasibility of controlling fire to achieve this aim. Funding has been secured (from USFS and the University of Edinburgh) for a PhD study on savannah fire and forest colonisation. A student is currently being recruited to start in Q4 of 2014. This study has strong support from National REDD+ coordination as it will provide essential information on the importance of fire (and fire control) as a means to increase carbon sequestration and its relevance to the national REDD strategy.





### A National REDD pilot project in Lefini?

The objective of the Batéké Project is now to integrate these linked activities into a REDD project. There is strong interest from the national CN REDD in the Batéké Plateau as a national pilot project, and the activities described above could be brought together under an umbrella project. Questions remain on the geographical scope of such a project, but it seems likely that Lefini and Lesio Louna reserves and their buffer zones, being ecologically, geographically and sociologically similar could provide the basis for a discrete project description. Work in FY 15 will explore this potential in more detail.

## 6. EXPLANATION OF DEVIATION FROM APPROVED FY14 BENCHMARKS

Refer to the worksheet on indicators. The main areas where proposed benchmarks have not been achieved are as follows:

**Wildlife densities:** The last wildlife surveys in the landscape were conducted in 2010. We have planned to execute a wildlife survey of Lefini in 2015 and of Ogooue Leketi NP in 2016. A wildlife inventory should therefore follow the evacuation of the logging companies from the park area, and establish a baseline for future management.

**AFOLU calculation of GHG emissions:** During 2014 we have begun the implementation of a number of activities that will lead to emissions reductions. An example is the creation of village plantations

to provide an alternative source of fuel wood. These activities will begin to deliver modest emissions reductions in 2015.

**Improved management of community use areas:** We have planned to use a tool for the evaluation of governance to evaluate the authority, capacity and power of local associations to control land use decisions in their CBNRMs. This tool is still under development, but the first trails of the evaluation approach will be completed in Batéké in November 2014.

**PAMET:** This tool, for the evaluation of protected area management will be used to provide a measure of management effectiveness. Unfortunately, in view of delays in setting up the workplan, the timetable in FY 14 did not permit the completion of this task in Lesio Louna. We will complete a first analysis there in 2015. The tool will also be used to establish a baseline in Ogooue Leketi, once the park has been officially gazetted, and a management authority is in place (likely 2016).

## 7. EXPLANATION OF VARIATION FROM APPROVED WORKPLAN

**Outreach on REDD and carbon stock monitoring:** In FY 14 we had planned to conduct specific outreach on REDD+ options, and on monitoring carbon stocks with local communities. In the absence of good local baseline data, we judged this intervention to be premature. Instead we have planned to use the data from the analysis of deforestation, the firewood study, and the findings from the USFS study on savannah fire to prepare a more specific outreach and communication package on REDD options for the Batéké Plateau. We hope to organise this event together with the CN REDD before the end December 2014.

**Micro-zoning of Lefini Reserve:** The Lefini Reserve remains effectively unmanaged, without a staff or an operational budget to protect or develop the area. WCS has completed many studies and much outreach work to prepare the ground for a reserve management plan. To date, however, there is still no sign of increased government investment in the reserve. Neither has there been any indication from the government of a willingness to form partnerships or to allow local associations (such as the Amies de la Lefini) a more formal role in reserve management. A more detailed zoning plan of the reserve is certainly needed, as several communities have use zones that overlap the area. However, further work on zoning seems futile if the information cannot be incorporated into a formal reserve management structure, and the communities in question cannot gain some official use rights over the lands they identify. We have therefore chosen to investigate a partnership agreement for the management of the Lefini Reserve that permits the delegation to local communities of oversight of parts of the reserve. This may involve the reclassification of the reserve as a Community Reserve. Such potential will be investigated in detail in FY 14.

**Micro-zoning of OLNP:** This activity was partially completed, though a series of discussions with the villages concerned on the regulations that will apply once the park has been created. Discussions were also held with the forest ministry's forest management support programme, *Programme d'Appui a la Gestion des Forêts* (PAGEF) on the definition of community development zones within management plans of the overlapping forest concessions. However, a detailed review of the previously completed micro-zoning for the park area has not been completed in FY 14. We have chosen to await a final arbitration on the creation of the park from the forest ministry, and a decision on the excision of the overlapping area from the 3 forestry concessions concerned, before continuing with this activity.



## **8. MANAGEMENT CHANGES, PARTNERING ARRANGEMENTS AND BUDGET ALLOCATIONS**

### **Personnel:**

Richard Malonga has moved to Nouabale Ndoki as Park Director. His duties as project manager in this landscape have been reassigned. Tim Rayden continues to provide overall landscape leadership and project oversight. Apolinaire Tsoumou has taken on administration of finance and logistics, and Lucie Escoufflaire has joined the team as Community Projects Coordinator. All other arrangements remain valid.

### **Partnerships:**

A partnership was formed with The Aspal Foundation as a sub-awardee for protection and development activities in the Lesio Louna wildlife reserve.

A partnership was signed with the *Service National de Reboisement* (SNR) for technical assistance with the creation of village agroforestry plantations.

### **Budget:**

No changes are foreseen. Expenditure was slow in the first half of FY 14 due to delays in approval of workplan, the fact that initial steps in many processes (eg feasibility studies) did not require large expenditure, and the need to recruit and train additional staff. Carry over is expected but we also expect expenditure to increase rapidly, now that seven new staff members have been recruited, and as implementation of different activities, notably anti-poaching missions ramp up in FY 15.

## **9. LINKS TO OTHER USG AGENCIES**

### **USFS**

Using funds made available by CARPE to USFS for work relating to climate change mitigation, USFS have helped organise and execute a scoping mission and feasibility study for a long term project on the role of fire in the Batéké savannahs. USFS is also providing funding for a PhD student to start this long term fire ecology study, which begins in October 2014. USFS is an ideal partner for this work given their experience in fire management, applied ecological research and reserve management.

### **USFWS: Projet Elephant**

WCS continues to receive support from the Endangered Species Programme of USFWS for anti-poaching patrols, and monitoring and surveillance of important elephant baïs in the proposed Ogooué Leketi national park. The existing financial support runs until March 2015, and is currently up for renewal. This funding comes through the African Elephant Conservation Fund and is part of the USFWS's long term commitment of to the protection and monitoring of the elephant population in central Africa.

## **10. LESSONS LEARNED**

### **Protein consumption and livelihoods improvements**

The bushmeat consumption study (Detoef 2014) and the IPHD feasibility study on commercial animal husbandry (Onuska 2014) both provide valuable new insight and recommendations on future work under CARPE III. These studies have helped to clarify intervention strategies relating to two problems

- The demand for animal protein and the consequent pressure on wildlife resources

- The need to improve livelihoods through socio-economic development interventions

The lessons learned from this research can be broadly summarised as follows:

Bushmeat is still the cheapest source of animal protein across much of the landscape, and a major component of the diet in all sites. However, hunting practices are un-regulated, and highly likely to be unsustainable, raising serious questions about long term food security. The price differential between domestic (farmed) meat and wild caught bushmeat means that it is difficult for the poorest communities to access sustainably produced alternatives to bushmeat. The price differential is due to the lack of large scale commercial production of farmed meat within Congo. Most of the chicken and fish consumed in the sites is imported from Pt Noire where it arrives imported from abroad.

Animal husbandry projects at community level have often been promoted as solutions to this development, conservation and food security problem. The argument suggests locally produced meat can substitute for bushmeat in the home, and when sold, can contribute revenue to the household and generating development. However this simplistic perspective masks a number of problems. Proper animal feed, with an adequate protein and micro-nutrient composition, is necessary to raise domestic animals and produce beyond what is needed for household consumption. Such feed is not currently produced in Congo, and is only available imported at a high cost. Small scale animal husbandry is very unlikely to be feasible and profitable, given the capacity and training needs of community members and the cost of adequate nutrition for the animals. If meat production is to be commercially viable, it requires an economy of scale to afford the necessary inputs, professional, technical expertise, advanced technology and a minimum of labour.

The IPHD feasibility study shows that large scale chicken and fish production can be financially viable and profitable in the Batéké landscape, and, most importantly, has the potential to bring the cost of domestically produced meat below the cost of bushmeat. Setting up a demonstration project, in partnership with IPHD and the Ministry of Agriculture, has become a priority for FY 15.

Producing farmed meat to substitute for wild caught bushmeat is, in summary, feasible and desirable from a conservation perspective. But commercially viable animal husbandry is an inappropriate solution to the livelihoods question at village level. Such projects will deliver farmed meat at reduced prices, but will not create much local employment, and may still be too expensive for purchase by the poorest farmers. To improve livelihoods at village level, it remains necessary to find other interventions which can work at micro-scale. These seem likely to involve improving farming techniques for the commodities that are currently in general use. They seem *unlikely* to involve small scale animal husbandry.

## **11. SUCCESS STORIES**

### **Fire ecology and fire management**

The plateau receives annual rainfall of over 2000mm, but curiously, remains largely dominated by savannah. The reasons for the absence of forest are linked to soil quality and human activities. The underlying soils are Kalahari sands, which were deposited around 25M years before present during an arid climatic period in which the desert extended almost to the equator. These areas remain sparsely vegetated today, in part because of the poor nutrient content, and in part because the soil structure does not retain moisture.

Under these conditions soil can accumulate if organic matter can build up, and, over time, improve the growing conditions for plants. However, regular fire (which is human induced, and has been a common feature of the landscape for hundreds of thousands of years) prevents this. Fire, therefore, raises a number of

interesting questions relating to the ecology of the landscape and the long term potential of the savannahs to contribute to national emissions targets under the REDD+ strategy.

Following discussions with the CN REDD and the US Forest Service on the importance of fire as a driver of savannah ecology, USFS agreed to sponsor an expertise mission to the landscape. The objective of the mission was to begin to evaluate the role of fire in the savannah, and the potential that controlling fire could stimulate changes in the grasslands and eventually lead to carbon accumulation.

The mission, involving 2 fire ecology experts from USFS, a technician from the CN REDD and WCS, was achieved in June 2014. The need to establish a long term monitoring system was immediately clear: if one is to test the role of fire, and the impacts of its exclusion, this will require 3-4 years of continual monitoring. A long term research project is therefore required. The mission

USFS, in partnership with the University of Edinburgh department of geography, have agreed to fund a PhD studentship to study this question. The student, who is currently being recruited by the University of Edinburgh, will begin in Jan 2015. The PhD study will enable a network of fire control plots to be put in place across different savannah habitats, and detailed measurements of the biomass and carbon implications of fire and fire exclusion.

The ultimate objective of the study is to evaluate the case for a fire management component of a REDD+ project in the area of Lefini reserve. If controlling fire can be demonstrated as a viable way to stimulate biomass and soil carbon accumulation in the savannah ecosystems of the plateau, this could become a major source of carbon finance. Data from the study will help to fill a large hole in the current knowledge on the importance of these savannahs for carbon sequestration in Congo.

USFS will provide on-going support to the study, with regular field missions, and advice on methods and data analysis. The student will be assisted in Congo by masters and doctoral students from the university in Brazzaville, and interns from the CN-REDD. This will ensure training, experimental techniques and results are shared between the parties. In short, the progress made to date in setting up this project represents a very significant success story. It shows of the ability of CARPE to bring together different actors and to work together to solve important questions.

### **Bushmeat consumption study (Detoef 2014)**

Diane Detoef, a masters student from the Ecole Nationale Supérieure de Toulouse, joined the WCS team in March 2014 at Batéké to complete research for a masters project in environmental conservation. Diane chose to focus on hunting practices and household consumption of bushmeat and other proteins. She established a research methodology and a sampling protocol in collaboration with Michelle Wieland of WCS, and, working with a team of research assistants, completed five months of data collection across six sites within the landscape.

Following a training event on the Basic Necessities Survey method, organised in Kinshasa by WCS, Diane integrated BNS data collection into her study, trained her research assistants on BNS data collection and created a BNS database for the Batéké project in the process.

The results of the two studies were combined in Diane's masters project report « *Evaluation des pratiques de chasse, de la consommation des protéines animales et des sources alternatives durables dans la zone périphérique du Parc National de l'Ogooué-Lékéti* » which was submitted and defended in September 2014. Diane has now taken a post with the WCS livelihoods team and will continue to work with Michelle Wieland to expand standardised approaches to livelihoods data collection across all CARPE sites.

## 12. REFERENCES

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